Parcel C RU-C5 Building 134 Update

BCT Meeting
April 26,2011

RU-C5 Groundwater Treatability Study (TS) Overview

1. Pre-Design Characterization/Baseline Sampling

2. Treatment Component (TC) TS Design Finalization

3. TC 1 and 3, Implementation of Hydraulic Fracturing and EHC Emplacement in Source Area and Plume

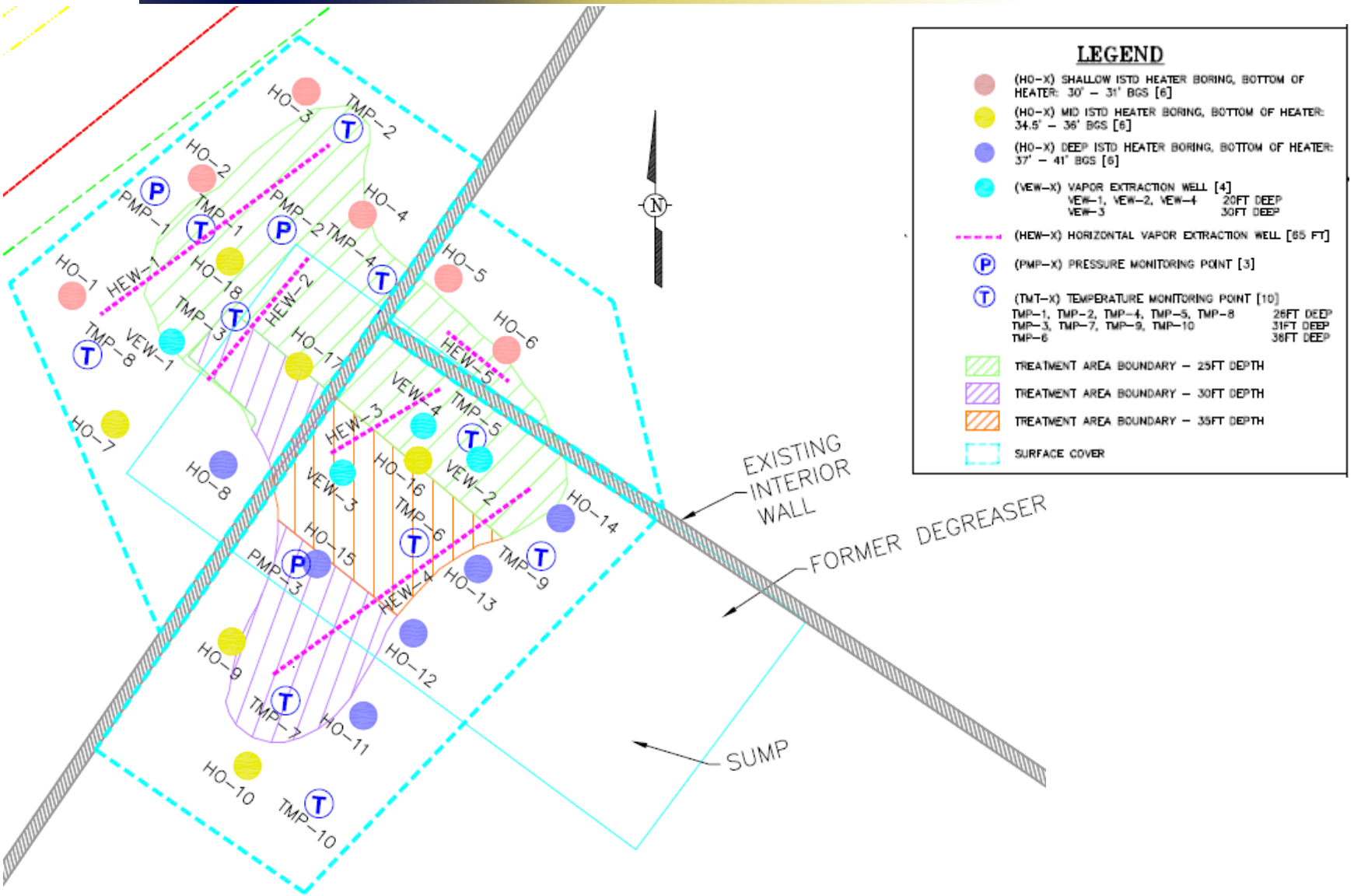
4. TC2: Thermal Conduction Heating (TCH)

5. TC3: LactOil Polish

TC2: Thermal Conduction Heating

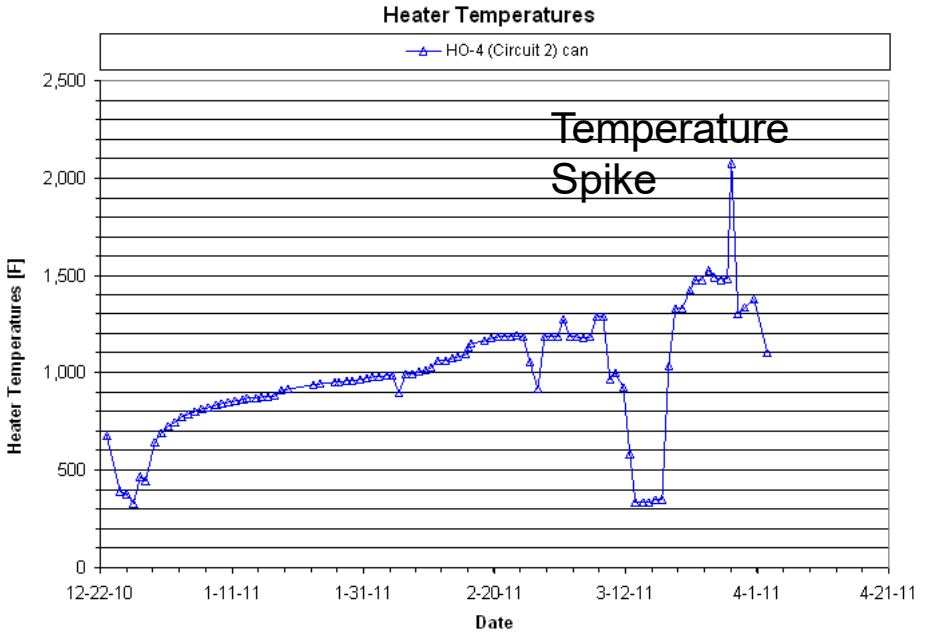
- Details of Shutdown and Performance
- Post –Thermal Sampling

TC2: TCH Treatment System As-Built

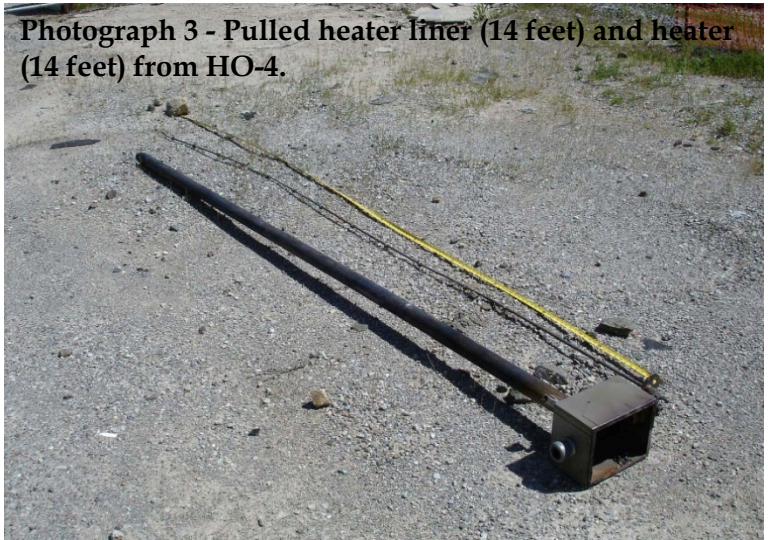


Recent Conditions Near the RU-C5 TS Area

Photograph 1 – Well HO-4, April 5, 2011

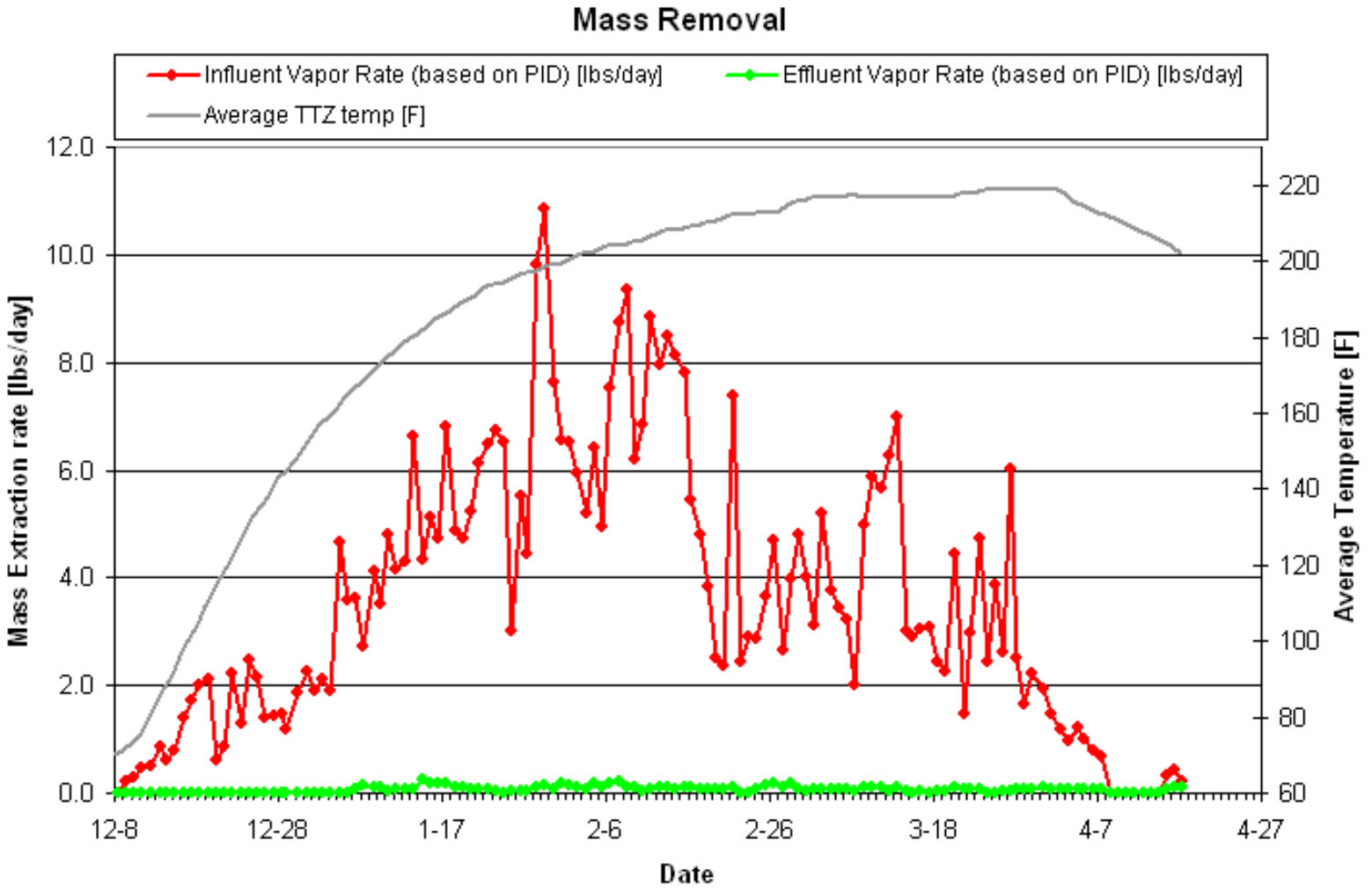


Photograph 2 – Interior of the heater box in Well HO-4

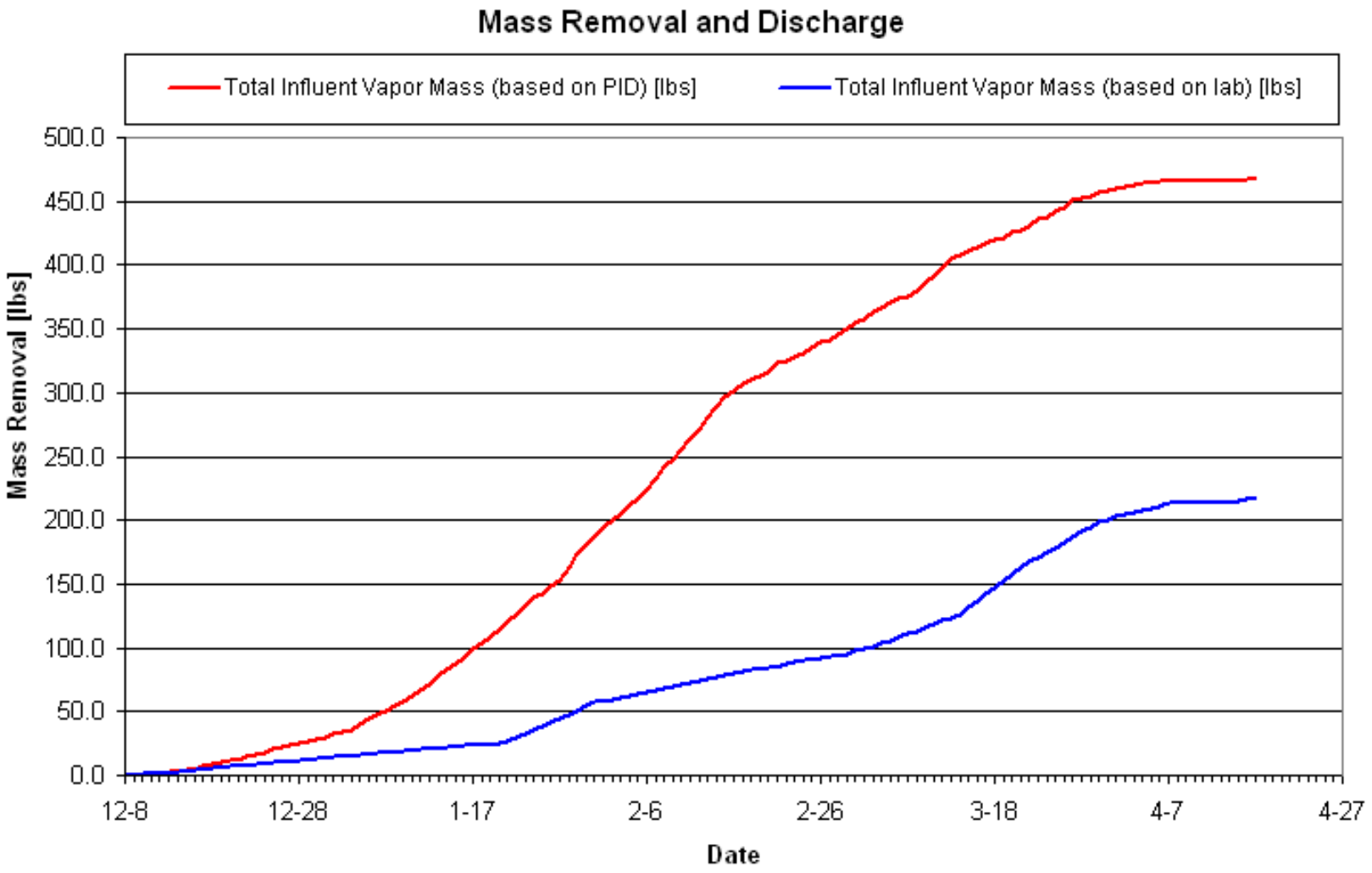


Photograph 3 - Pulled heater liner (14 feet) and heater (14 feet) from HO-4.

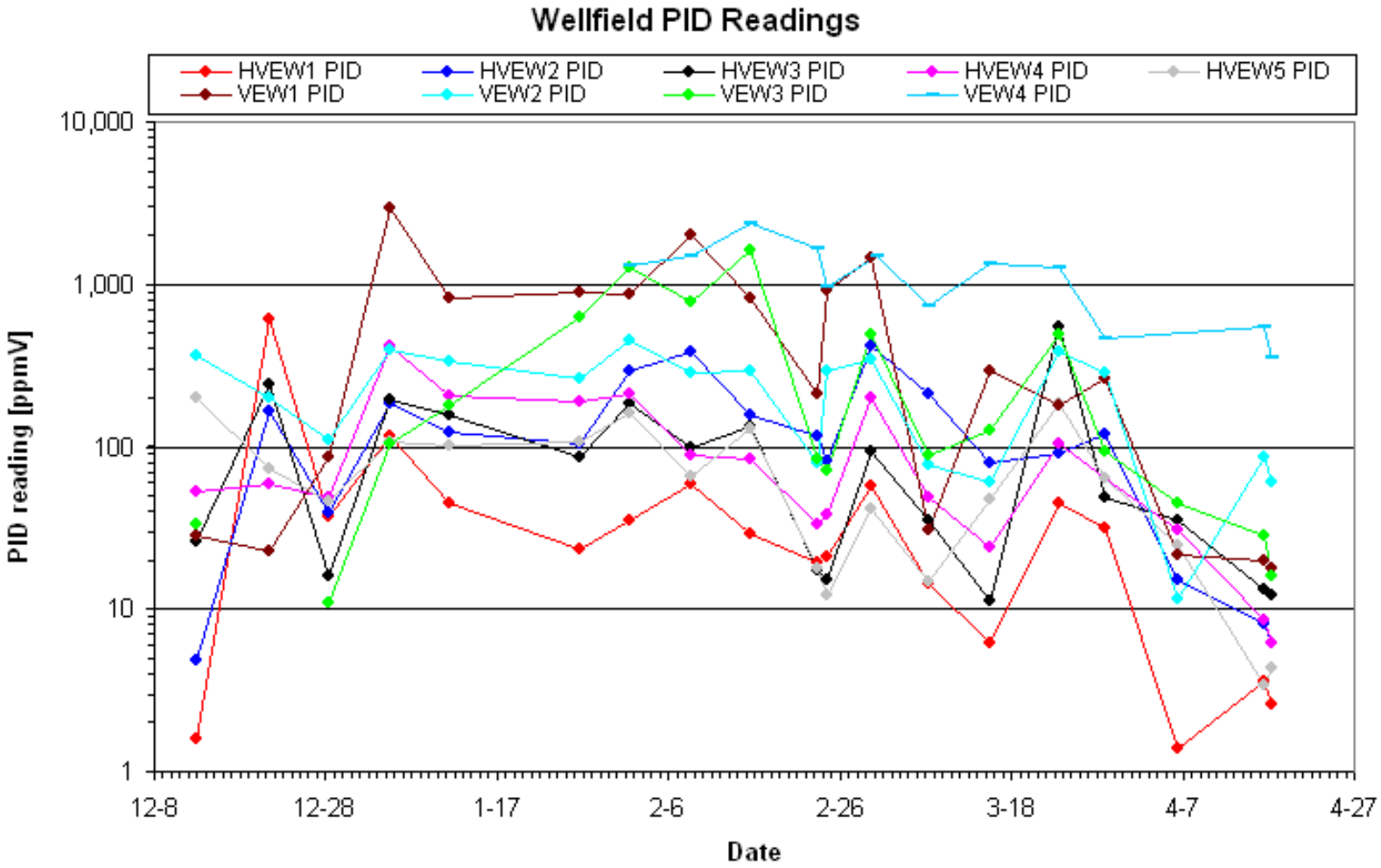
Mass Removal Rate – based on PID



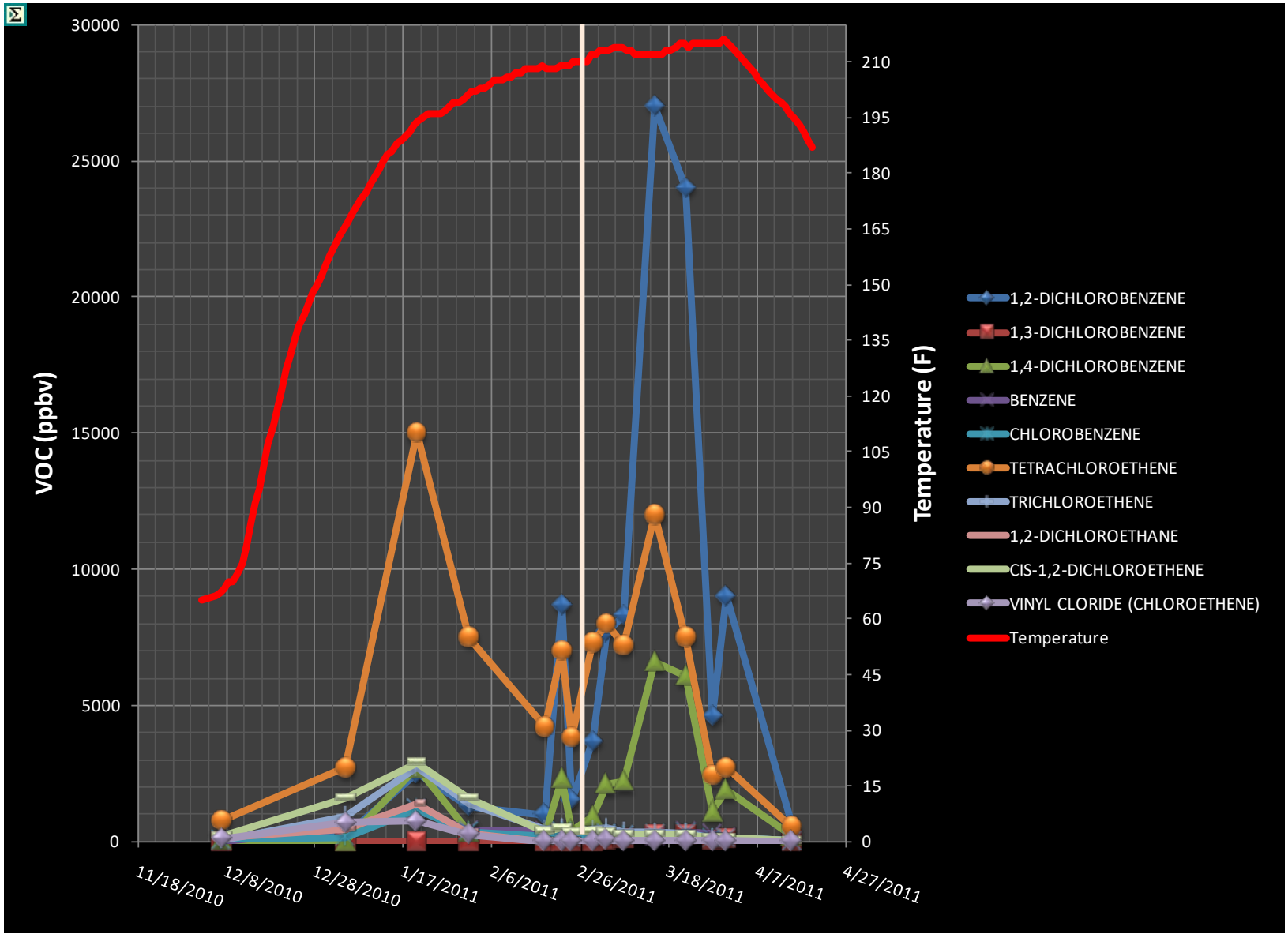
Mass Removal rate – PID vs. Lab



Well Field PID Readings



Well Field Summa Influent Concentrations



TC2: TCH Conclusions

Thermal system heaters were shut down Apr. 5, 2011, and SVE system operated from Apr. 14-22, 2011.

- Summary of Operations:
  - 1,2-DCB went from 7 lb/day (Mar. 22) to 2.6 lb/day (Mar. 31) to current 0.05 lb/day (Apr. 15).
  - 1,4-DCB went from 1.8 lb/day to 0.6 lb/day to current 0.02 lb/day.
  - PCE went from 2.5 lb/day to 1.0 lb/day to current 0.06 lb/day.

TC2: TCH Conclusions

- April 4 WebEx Decisions:
  - Run TCH to April 21 and SVE to May 2
  - Eliminate *LactOil* polish in TC3
- Because of the recent field events cut TCH operations short
  - TCH shortened to April 5 and SVE to April 22
  - Continue *LactOil* polish in TC3
- TC2 System Demobilization: May 2011
  - Will evaluate heater casings and liners.
  - Source of flammable gasses will be investigated through soil and soil gas sampling.

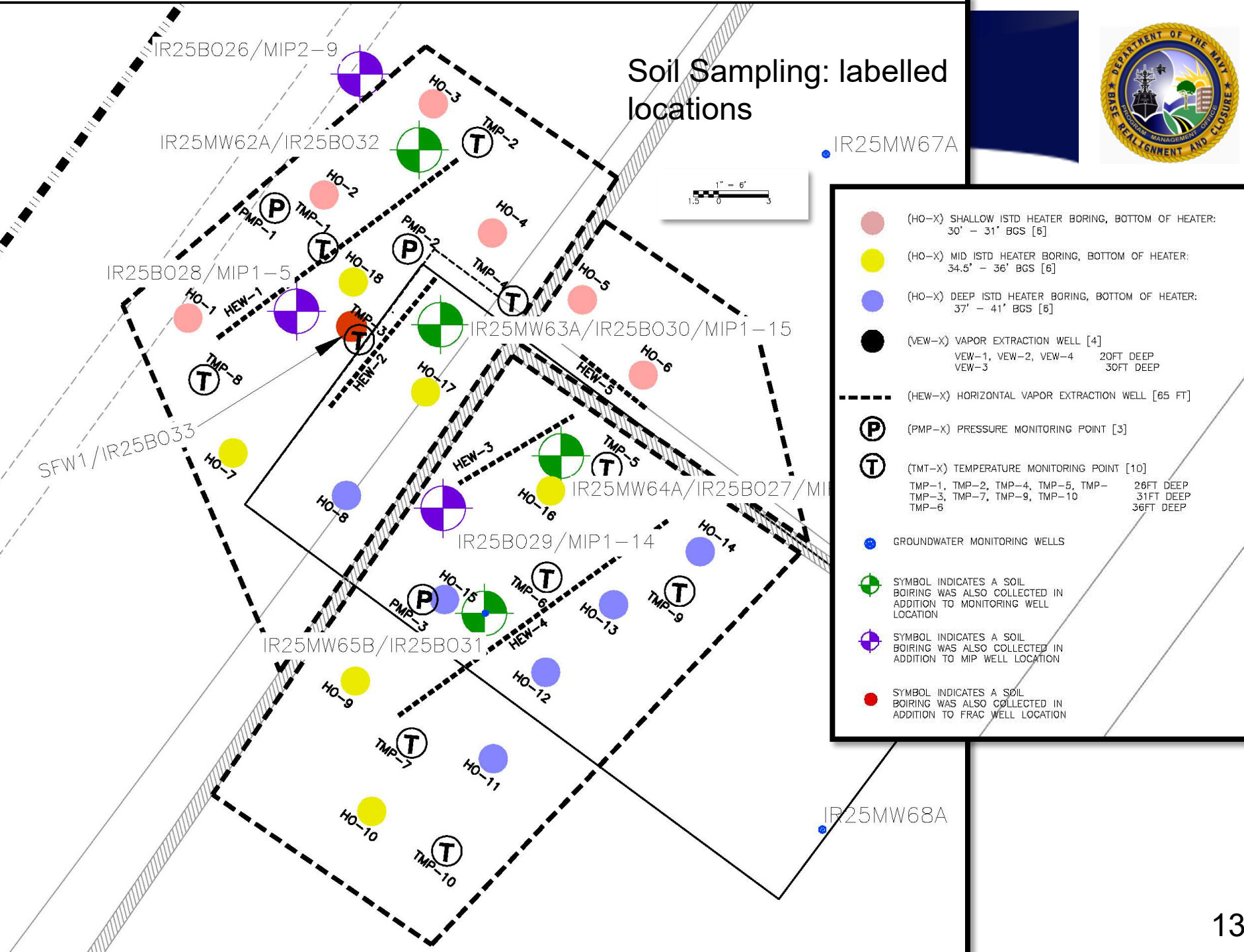
Details of Post-Thermal Sampling

- 40 soil samples from 8 borings will be collected at locations near pre-thermal borings and be analyzed for:
  - VOC, SVOC, Metals, TPH (total extractable)
  - Using high-temperature sampling protocol

- Soil gas samples collected from SVE influent (last one Apr. 20) and PMP-1

- Groundwater sampling (IR25MW62A, -63A, 64A and 65B) for comprehensive suite of VOCs, SVOCs, TPH, Metals

Soil Sampling: labelled locations



TC3: Polish Injection Design Summary

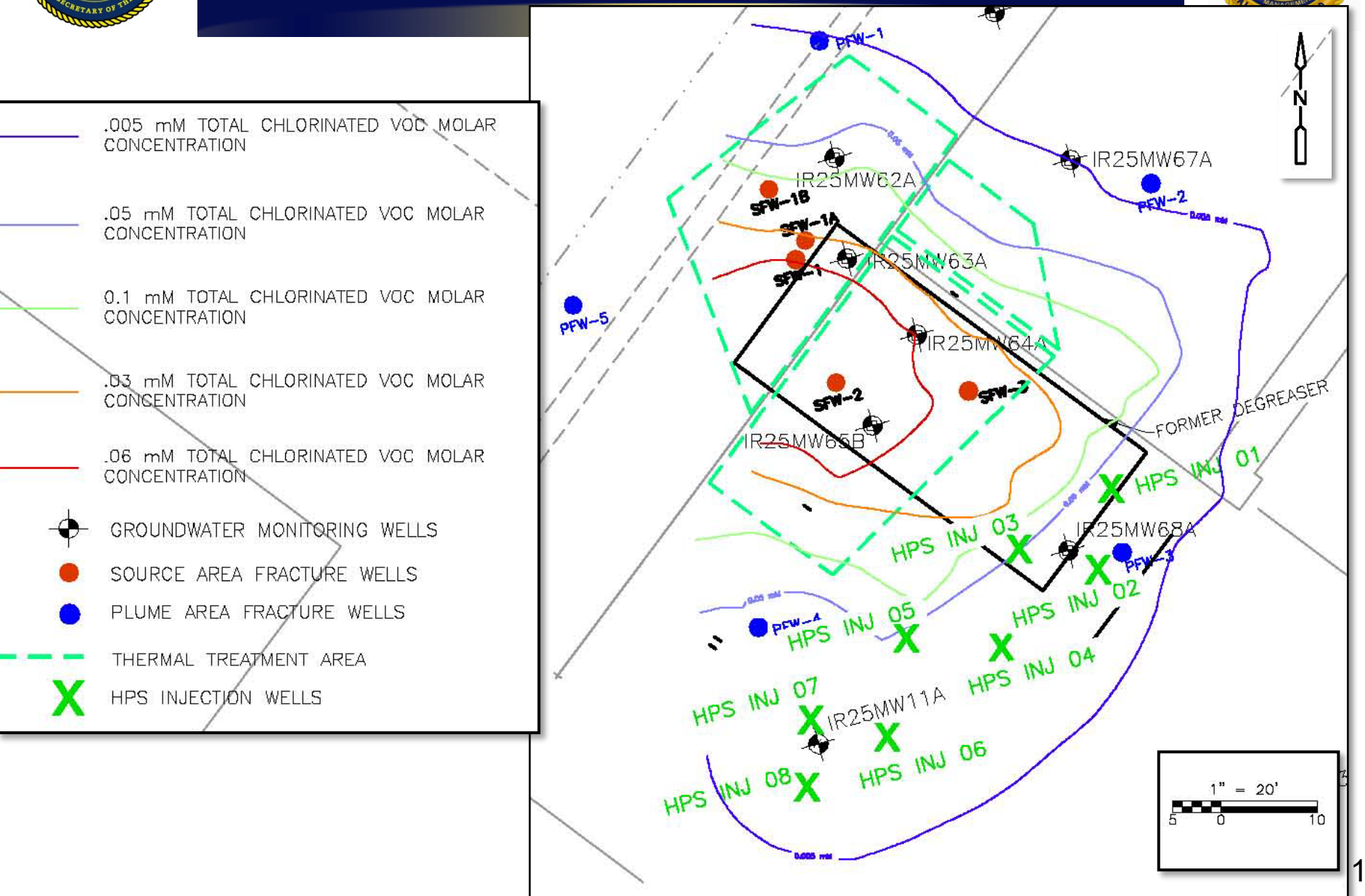
- Design Parameters
- Injection Locations
- Schedule

TC3: Polish Injection Design Parameters

1. **Use LactOil- combination of lactate (35%) and a microemusified vegetable oil (45%).**
2. **Based on CDM and the Shaw Treatability Tests, target in situ concentration ~1000 mg/L carbon.**

Design Injection Parameters	
Target ROI	5 ft
Target Depth Interval- A aquifer	18-21 ft bgs (~ to bay mud)
Injection Concentration	2% v/v, or 16 g LactOil/L
Flow Rate	0.5 gpm
Effective Porosity (assumed)	0.15
Volume per Well	881 gallons
Total Volume	7048 gallons
Injection Time	29 hours

TC3: LactOil Polish at IR25MW11A and IR25MW68A



Schedule

- Comprehensive post–TS soil sampling: ~Apr. 27-29, 2011, (8 borings, 40 samples).
- TC3 polish injections:~ week of May 10, 2011.
- TC3 Sampling Event 1: May 19, 2011.
- Comprehensive post–TS groundwater, soil gas: ~Jun. 14-20, 2011. (Thirteen groundwater monitoring wells and 5 soil vapor points).
- Draft Technical Report: BCT Review - Sept. 6, 2011.